

**What is claimed is:**

Claim 1. An arc tube comprising:

an arc tube body including a sealed bulb  
serving as a discharge portion, the sealed bulb  
5 sandwiched by front and rear pinch seal portions  
and formed at a portion of a tube along a  
longitudinal direction of the tube; and

a cylindrical shroud joined with the arc tube  
body and covering the sealed bulb to form an  
10 airtight sealed space around the arc tube body,  
wherein

the arc tube body further includes circular  
cross- sectional portions provided at front and  
rear end sides of the arc tube body to which front  
15 and rear end portions of the shroud are  
respectively joined.

Claim 2. A method of fabricating an arc tube  
for a discharge lamp including:

20 forming shroud joining portions with circular  
cross sections on front and rear end sides of an  
arc tube body;

inserting the arc tube body into a shroud;

heating predetermined portions of the shroud

25 wherein the predetermined portions are modified in

a direction of reducing diameters thereof as an effect of the heating; and

joining the predetermined portions to the shroud joining portions on the front and rear end  
5 sides of the arc tube body.

Claim 3. The method of fabricating an arc tube for a discharge lamp according to claim 2, wherein the joining step is performed by a welding process.

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Claim 4. The method of fabricating an arc tube for a discharge lamp according to claim 3, wherein the predetermined portions include a front end side and a rear end side of the shroud, and wherein the  
15 rear end side of the shroud is welded to the rear end side of the arc tube body, and the front end side of the shroud is welded to the front end side of the arc tube body.

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Claim 5. The method of fabricating an arc tube for a discharge lamp according to claim 2, wherein the shroud joining portions include a cylindrical non-pinch seal portion in an extended manner at a backward portion of a first pinch seal portion on

25 the rear end side of the arc tube body, and a shrink

seal portion adjacent to a forward portion of a second pinch seal portion on the front end side of the arc tube body, and

the joining step includes joining a rear end side of the shroud to the cylindrical non-pinch seal portion on the rear end side of the arc tube body, and joining a front end side of the shroud to the shrink seal portion on the front end side of the arc tube body.

Claim 6. The method of fabricating an arc tube for a discharge lamp according to claim 2, wherein the shroud joining portions include a cylindrical non-pinch seal portion provided with a circular flange portion on an outer periphery thereof in an extended manner at a backward portion of a pinch seal portion on the rear end side of the arc tube body, and

the joining step includes joining the rear end side of the shroud to the circular flange portion on the rear end side of the arc tube body.

Claim 7. The method of fabricating an arc tube for a discharge lamp according to claim 5, wherein the cylindrical non-pinch seal portion includes a

circular flange portion on an outer periphery, and  
the rear end side of the shroud is joined to  
the circular flange portion on the rear end side  
of the arc tube body.

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Claim 8. The method of fabricating an arc tube  
for a discharge lamp according to claim 2, further  
including forming the arc tube body by:

forming a bulb at a portion of a tube;

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inserting a first electrode assembly from one  
end side of the tube provided with the bulb;

pinch-sealing a first portion of the tube  
between the one end side and the bulb, and near the  
bulb;

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supplying a predetermined filling material to  
the bulb;

inserting a second electrode assembly from the  
other end side of the tube and holding the second  
electrode assembly at a predetermined position,

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supplying an inactive gas within the bulb;

pinch-sealing or tipping off a second portion  
of the tube near the other end side of the tube to  
seal the inactive gas within the tube; and

pinch-sealing a third portion of the tube

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between the other end side and the bulb, and near

the bulb.

Claim 9. The method of fabricating an arc tube  
for a discharge lamp according to claim 8, wherein  
5 prior to pinch-sealing of the third portion of the  
tube between the other end side and the bulb, and  
near the bulb, a seal expected area near the bulb  
is heated and molten to perform shrink sealing to  
form a shrink seal portion while cooling the bulb  
10 with a cooling medium, and thereafter, during the  
pinch-sealing, a bulb side of the shrink seal  
portion is pinch-sealed with a predetermined width,  
thereby forming the pinch seal portion in the third  
portion of the tube adjacent to the shrink seal  
15 portion.

Claim 10. The method of fabricating an arc tube  
for a discharge lamp according to claim 9, wherein  
a negative pressure is maintained within the  
20 shroud while a rear end side of the shroud is joined  
to the rear end side of the arc tube body by welding,  
a welding expected area on a front end side of the  
shroud is heated, molten and softened, and a front  
end side of the shroud is shrink-sealed to the  
25 shrink seal portion adjacent to the pinch seal

